



U 5966648A

United States Patent [19]

Ortberg et al.

[11] Patent Number: 5,966,648
[45] Date of Patent: Oct. 12, 1999

[54] RF CIRCUIT MODULE AND CHASSIS INCLUDING AMPLIFIER

[75] Inventors: Todd Charles Ortberg, Chanhassen; Zakhary Bluband, Plymouth; Glen Backes, Edina, all of Minn.

[73] Assignee: ADC Telecommunications, Inc. Minnetonka, Mich.

[21] Appl. No.: 08/988,047

[22] Filed: Dec. 10, 1997

[51] Int. CL⁶ H04B 1/08

[52] U.S. Cl. 455/347; 455/6.2; 455/349; 455/341; 361/752

[58] Field of Search 455/6.2, 90, 347, 455/348, 349, 575, 341, 351; 361/733, 752, 785, 796, 801, 802, 814, 816; 174/358; 439/61, 610, 668

[56] References Cited

U.S. PATENT DOCUMENTS

D. 234,406	2/1975	Hoshino .	
D. 259,565	6/1981	Watanabe .	
D. 316,553	4/1991	Azima .	
D. 347,844	6/1994	Diachyo .	
3,160,456	12/1964	O'Keefe et al. .	
4,813,886	3/1989	Roos et al. .	
5,546,282	8/1996	Hill et al. .	
5,548,248	8/1996	Wang	330/288
5,628,058	5/1997	Hiraki	455/349
5,710,999	1/1998	Iwase et al.	455/349
5,903,829	5/1999	Anderson et al.	455/347

OTHER PUBLICATIONS

"Headend Combining/Splitting Network," Cox Communications, undated, 16 pages.
Crutchfield Catalog, Summer 1994, p. 60.

Text and drawings of U.S. Patent Application Serial No. 08/761,525, filed Dec. 6, 1996.

Text and drawings of U.S. Patent Application Serial No. 08/900,187, filed Jul. 25, 1997.

Text and drawings of U.S. Patent Application Serial No. 08/761,776, filed Dec. 6, 1996.

Text and drawings of U.S. Patent Application Serial No. 08/761,723, filed Dec. 6, 1996.

ADC Telecommunications, Inc. Catalog, "Video Signal Distribution Products," 2 front cover pages, pp. 1-47, and back cover page, dated Oct., 1996.

ADC Telecommunications, Inc. catalog "ADC's RF Worx™ RF Distribution and Management Products", 12 pages, dated Dec., 1996.

ADC Telecommunications Inc. document, RF Worx Passive Splitter/Combiner and Directional Coupler User Manual, 23 pages, dated 1997.

Text and drawings of U.S. Patent Application Serial No. 08/762,519, filed Dec. 6, 1996.

Primary Examiner—Edward F. Urban

Assistant Examiner—Thuan T. Nguyen

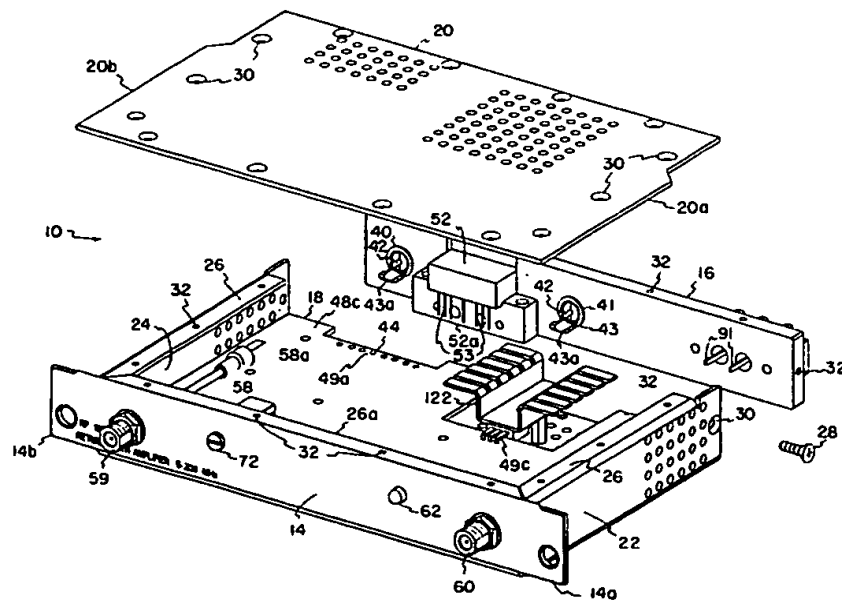
Attorney, Agent, or Firm—Merchant & Gould P.C.

[57]

ABSTRACT

An amplifier module for radio frequency signal circuits includes an electrically conductive housing. Two coax connectors are electrically linked to an amplifier circuit contained within the module. A separate transformer is external to the module. Both the module and the external transformer are mountable to a chassis frame. Other modules are usable in the system in addition to the amplifier module. The transformer can be wall mounted to the chassis frame, or the transformer can be internal to a module which also mounts to the chassis frame.

9 Claims, 12 Drawing Sheets



0907626 101200